

# Science Serving Alaska's Coasts 2003–2008

## MISSION

***“Science Serving Alaska’s Coasts.”*** As part of the national network of universities, Alaska Sea Grant’s mission is to develop and support research, education, and outreach programs that enhance the wise use and conservation of coastal and marine resources.

## VISION

Since 1970, Alaska Sea Grant has been a highly effective program of research, education, extension, and communications serving 54% of the U.S. general coastline and 74% of its continental shelf area. Through partnership approaches with regional public and private sectors, this university-based program meets the changing environmental, economic, and subsistence needs of people dependent on coastal and marine resources. The Alaska Sea Grant College Program will provide leadership in developing and providing the knowledge necessary to create a sustainable coastal economy and environment in the face of natural and man-made change.

## SETTING

The remote location of the Arctic Ocean, Chukchi Sea, Bering Sea, Gulf of Alaska, and the inside waters of southeast Alaska, and the relatively recent domestic exploitation of their economic value, have left these waters unexplored and not well understood compared to other U.S. marine and coastal waters. This substantial lack of understanding of the marine environments in the Alaska region requires that the scientific community and state and federal marine resource managers work together to ensure sustained marine ecosystem health.

Protecting the future productivity of these ecosystems is important. Alaska's continental shelf supports the richest diversity of marine mammals in the Northern Hemisphere, and almost half of the nation's fishery volume. Other important economic activities also share in the use of this ocean environment. Although the mineral wealth of the region is still undetermined, 18% of the nation's domestic oil now comes from the Alaska coastal zone. In addition to their economic importance, the marine and coastal waters are important to the subsistence lifestyle of Alaska's indigenous people.

The waters off Alaska are as important from a state perspective as from a national one. Nine of Alaska's ten largest communities are located on the coast, and in 2000, 85% of Alaska's population resided in coastal boroughs. The ports of Dutch Harbor and Kodiak were ranked second and third in the nation for the value of their fisheries in 2000. Tourism has grown to become the second-largest private industry employer in Alaska, with major impacts upon coastal communities. During the 2000 tourist season, cruise ships brought roughly 900,000 passengers and crew to Juneau, where only 30,711 people reside in the city and borough.

Alaska has been and continues to be at the forefront of efforts to maximize the benefits of fisheries within sustainable harvest levels. More than 4.46 billion pounds of seafood was harvested from Alaskan waters in 2000, comprising approximately 48% of the entire U.S. seafood harvest. Alaska's commercial fishing industry is the number one private sector employer in Alaska, providing more jobs than oil, gas, timber, and tourism. The

Alaska salmon industry is the largest seafood industry in the world and the only salmon industry in the world to be certified as sustainable by the Marine Stewardship Council. However, over-capitalization and competition from foreign-farmed salmon have drastically decreased the value of the Alaska salmon fishery, which comprises 91% of the value of salmon harvested in U.S. waters. In addition, many fisheries remain locked in wasteful open-access races. The challenges of effective management in the face of changing environmental and economic factors will require both the gathering of knowledge and efficient extension of that knowledge to coastal managers and communities.

## **STRATEGIC ISSUES**

The Alaska Sea Grant strategic plan is based upon the National Sea Grant Strategic Plan, but articulates a subset of those issues most relevant to Alaska in the upcoming five years in each of three national strategic areas:

Providing *economic leadership* for marine biotechnology, fisheries, aquaculture, seafood safety, and coastal economic development;

Enhancing *coastal ecosystem health and public safety* related to water quality, coastal habitat, and coastal hazards; and

Creating a highly trained workforce and scientifically and environmentally informed citizenry through efforts in *education and human resources*.

### ***Economic Leadership***

Three goals of the Alaska Sea Grant Program address economic leadership challenges in fisheries, seafood quality and safety, and coastal economic development.

1. Develop production and management strategies that make Alaska fishery resources sustainable and competitive.
  - a. Improve our understanding of the interactions between multiple species in areas such as predator-prey, competition for food or habitat, disease, and climatic and regime change affecting environmental variables.
  - b. Promote the development of new methodologies for solving problems in stock structure, life history, and basic biology and ecology of fish species, especially those with regional distributions and importance.
  - c. Develop models linking ecological, biological, and socioeconomic effects of various rights-based and alternative fishery management approaches.
  - d. Determine management strategies for diverse assemblages of species, such as rockfish.
  - e. Address the effectiveness of stock assessment models involving single and multiple species.
  - f. Examine biological effects of hatchery-produced salmon on wild stocks of Pacific salmon.

- g. Nurture science communication and encourage development of joint research projects among regional and international resource managers and scientists through Lowell Wakefield Fisheries Symposium Series and other scientific meetings and workshops.
- 2. Increase the value of the seafood industry by enhancing quality and safety, and encouraging development of new products, processing, and markets.
  - a. Provide leadership in assuring seafood safety and in developing the ability to detect and isolate poor quality, contaminated, or adulterated products.
  - b. Develop seafood and seafood-based products, including the utilization of bycatch, byproducts, and undersized fish.
  - c. To become more competitive in the world market, in partnership with Alaska Seafood Marketing Institute and the seafood industry, encourage innovative research and information transfer in areas of improving product quality, availability, and value-added utilization.
  - d. Reduce the consumption of energy and fresh water in seafood processing through education, training, and demonstration of new processes and technologies.
- 3. Address sustainability of coastal communities faced with changes in marine resource availability and value.
  - a. In partnership with affected communities, fishers, processors, and other inshore fisheries, stimulate restructuring of the salmon industry and the production and marketing of quality products.
  - b. Promote informed decision-making through workshops and educational materials while serving in a non-advocacy role that promotes extensive community participation.
  - c. Develop regional models of ecological and community resilience in the face of changes in availability of marine resources.
  - d. Provide socioeconomic analyses of proposed changes that involve smaller rural communities as well as larger population centers.
  - e. Assist coastal communities in managing the growth of recreation and tourism so that development is sustainable for both the community and environment.
  - f. Help coastal communities understand regulatory and permitting processes for shellfish aquaculture, assist in feasibility studies, and provide guidelines for developing commercial mariculture operations in Alaska.

### ***Coastal Ecosystem Health and Public Safety***

Because of the large investments currently being made in coastal ecosystem health in Alaska by the North Pacific Research Board and the Gulf of Alaska Ecosystem

Monitoring and Research Program, the Alaska Sea Grant Program has one goal in this strategic area.

4. Prepare for and respond to natural coastal hazards and climate change in coastal communities.
  - a. Examine community and environmental resilience to changes in climate or coastal hazards and develop risk vulnerability models or indices for coastal hazards.
  - b. Develop publications, products, and Web-based educational programs on hazard mitigation and safety at sea for fishing vessels and charter vessels involved in ecotourism and recreation activities.

### ***Education and Human Resources***

Alaska Sea Grant's role in education for preschool to Elderhostel has been one of the program's most visible and important outcomes. Since 1985, Alaska Sea Grant has provided stipends to more than 80 graduate students in direct support of their Alaska Sea Grant research. Most of these students graduate to productive careers in business, academia, and government, with nearly 40% remaining in Alaska. An investment of 20 to 25% of the program's federal funds is directed at educational programs and traineeships. Two Alaska Sea Grant goals are directed at education and human resources.

5. Produce a highly trained workforce.
  - a. Encourage capacity building within Alaska and especially in rural communities to develop specialized skills required by coastal industries and state and federal resource agencies.
  - b. Educate specialists to wisely manage the abundant natural resources in Alaska through graduate student support associated with Sea Grant funded research and through special fellowships funded in partnership with other agencies, industries, and individuals.
  - c. Support publication and distribution of scientific and technical materials that can be used in formal and informal educational settings.
  - d. Develop partnerships that support programs and training opportunities for educators involved in formal (K-12) and informal (e.g., 4-H, science camps, Girl Scouts) education.
  - e. In association with the University of Alaska, develop and deliver college credit field courses dealing with Alaska's marine resources and ecosystems to interns and seasonal employees for state and federal management agencies.
6. Create scientifically and environmentally informed citizens.
  - a. Produce high-quality publications and video and radio productions that effectively communicate the results of Alaska Sea Grant activities to both general and specialized audiences.

- b. Actively engage and encourage high school students from throughout the state to investigate research projects dealing with local and statewide marine resource issues as participants in the Alaska regional National Ocean Sciences Bowl.
- c. In partnership with state and federal management agencies, nonprofits, and educational organizations, create relevant communications products and outreach programs on coastal resource issues for use by state, national, and international audiences.
- d. Engage coastal communities in an integrated approach to observation and data collection using logbooks, collecting samples from commercial and subsistence fishers and hunters, and otherwise becoming involved in pertinent and visible research.
- e. Develop new marine and coastal communications products using existing media and emerging technologies.